

Notice of Allowability

Application No.

10/719,738

Applicant(s)

CHANG, YICHENG

Examiner

Michael Pervan

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 31 October 2007.
2. ☒ The allowed claim(s) is/are 2,5-7,9,11-14,16 and 18-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steven Koffs on January 16, 2008.

The application has been amended as follows:

Specification

Please amend page 14, paragraph 26 as follows:

[0026] Referring to Fig. 4, an example of the primary and secondary video image sub-frames integration is illustrated. It is assumed, for illustration purposes, that the display device's baseline video image frame display frequency is 60 MHz for a single frame of pixel data. The integration of two video sub-frames, the primary and the secondary frames, will require individual video image frame display frequency to be at 120 MHz.

Please amend page 15, paragraph 28 as follows:

[0028] Both the primary and the secondary sub-frames are shown displayed at a video image frame frequency of 120 MHz, twice as much as the baseline frequency.

The resultant sequential display of the two sub-frames 402 and 404 provides the viewer with a compensated and complete video image frame at an effective display frequency of 60 MHz, matching that of the display device's baseline frequency. From the perspective of the viewer, the effective video image frame 406 is displayed at an effective 60 MHz display frequency with no discernable visual differences among the pixels of the video image frame.

Please amend page 16, paragraph 30 as follows:

[0030] Another example of the primary and secondary sub-frame integration can be used for further describing the invention. When a plurality of pixels are expected to have 100 nits uniformly, the stressed pixels of a primary video image sub-frame are displayed at a nits level lower than 100 nits due to stressed pixel decay and the non-stressed pixels within the same sub-frame displayed at 100 nits. Knowing the possibility of degradation, the stressed pixels as displayed by the primary sub-frame are corrected and compensated for in the secondary sub-frame by displaying the same at an additional 100 nits at a display video image frequency of 120 MHz. The stressed pixels are thus corrected and compensated as they are effectively displayed at 100 nits with a 60 MHz frame refresh rate. On the other hand, the non-stressed pixels of the primary sub-frame can be displayed at 100 nits and not receiving any additional compensation display data for the secondary sub-frame so that it will also exhibit an effective display of 100 nits at a frequency of 60 MHz.

Claims

Please amend Claim 5 as follows:

A method for compensating stressed pixels on a display device, the method comprising:

receiving a video data input for displaying a video image frame at a first frequency;

detecting one or more pixels in the video image frame as one or more stressed pixels;

~~displaying a primary sub-frame representing at least a part of the video image frame, the primary sub-frame having the stressed pixels whose brightness is expected to be compensated;~~

determining compensating brightness for each of the stressed pixels;

~~displaying at least one secondary sub-frame having the predetermined stressed pixels thereon with predetermined compensating brightness, wherein the primary and secondary sub-frames are displayed separately and sequentially at a second frequency so that the separation of the two sub-frames is not detectable by a viewer;~~

forming a primary and a secondary sub-frames based on the determined compensating brightness; and

determining the a second frequency based on the determined compensating brightness;

displaying the primary sub-frame representing at least a part of the video image frame, the primary sub-frame having the stressed pixels whose brightness is expected to be compensated; and

displaying at least one secondary sub-frame having the predetermined stressed pixels thereon with predetermined compensating brightness, wherein the primary and secondary sub-frames are displayed separately and sequentially at the second frequency, which is different from the first frequency, so that the separation of the two sub-frames is not detectable by a viewer.

Please amend Claim 11 as follows:

A method for compensating stressed pixels on a light-emitting diode (LED) based display device, the method comprising:

receiving a video data input for displaying a video image frame at a first frequency;

detecting one or more pixels in the video image frame as stressed pixels;

~~displaying a primary sub-frame representing at least a part of the video image frame, the primary sub-frame having one or more stressed pixels, at least one of whose display parameters is degraded due to an accumulative usage of the LED display device;~~

determining compensation display data with regard to the degraded parameter for each of the stressed pixels;

~~displaying at least one secondary sub-frame complementing the primary sub-frame and having the detected stressed pixels thereon with the degraded display parameter compensated, wherein the primary and secondary sub-frames are displayed sequentially at a second frequency so that the video image frame is displayed without making the sequential displaying of the two sub-frames detectable by a viewer;~~

forming the a primary and a secondary sub-frames based on the determined compensation data; and

determining the a second frequency based on the determined compensation data;

displaying the primary sub-frame representing at least a part of the video image frame, the primary sub-frame having one or more stressed pixels, at least one of whose display parameters is degraded due to an accumulative usage of the LED display device; and

displaying at least one secondary sub-frame complementing the primary sub-frame and having the detected stressed pixels thereon with the degraded display parameter compensated, wherein the primary and secondary sub-frames are displayed sequentially at the second frequency, which is different from the first frequency, so that the video image frame is displayed without making the sequential displaying of the two sub-frames detectable by a viewer.

Please amend Claim 18 as follows:

A system for compensating stressed pixels on a light-emitting diode (LED) based display device, the system comprising:

means for receiving a video data input for displaying a video image frame at a first frequency;

means for processing information for one or more stressed pixels in the video image frame, wherein the means for processing comprises means for determining compensation display data with regard to at least one degraded parameter for each of the stressed pixels;

means for displaying a primary sub-frame and at least one secondary sub-frame sequentially at a second frequency, which is different from the first frequency, so that the sequential displaying of the primary and secondary sub-frames is not detectable by a viewer, wherein the primary sub-frame has the stressed pixels with the display parameters being degraded due to an accumulative usage of the LED display device, and the secondary sub-frame has the detected stressed pixels thereon with the degraded display parameter compensated; and

means for:

forming the primary and secondary sub-frames based on the determined compensation data; and

determining the second frequency based on the determined compensation data.

Allowable Subject Matter

2. Claims 2, 5-7, 9, 11-14, 16 and 18-20 are allowed.
3. The following is an examiner's statement of reasons for allowance:

Claims 5, 11 and 18 recite, among other features, "forming the primary and secondary sub-frames based on the determined compensating brightness and determining the second frequency based on the determined compensating brightness".

Allen, Waterman Dehmlow disclose receiving video at a first frequency, detecting one or more pixels as being stressed, determining compensating brightness for the stressed pixels and displaying primary and secondary sub-frames separately and sequentially so that the separation of the two sub-frames is not detectable by a viewer.

However, Allen, Waterman and Dehmlow do not disclose forming the primary and secondary sub-frames based on the determined compensating brightness and determining the second frequency based on the determined compensating brightness.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/719,738
Art Unit: 2629

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP
Jan. 17, 2008

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a stylized flourish at the end.